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ABSTRACT

This unit presents a five-day series of classroom activities designed to help students become more aware of the energy situation and their individual responsibilities toward it. Each day's lesson includes: (1) activity title; (2) motivational hints; (3) objectives; (4) materials needed; and (5) description of the activity. A list of resource materials and their sources is provided. (Author/RE)

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ENERGY AWARENESS:

AN INTRODUCTION TO THE ENERGY SITUATION

by Amy A. Land

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Energy Awareness: An Introduction to the Energy Situation

RATIONALE:

People, particularly young people, must be aware of the energy situation in which we find ourselves.

GOALS:

The goals of this unit are:
--To make students more aware of the energy crisis and their individual responsibility towards it.
--To acquaint students with energy terminology.
--To enable students to identify different sources of energy and to discover interesting and unusual facts about energy.
--To help students realize the urgency of our present energy situation.
--To bring students to an awareness of present day dependency on energy.
--To instill in students the importance of individual responsibility in energy conservation.

LEVEL:

With the aid of written and oral skills developed in the language arts area, students in 8th grade English (average to above average achievers) can become informed about energy.

PREREQUISITES:

The students should be able to:
--read with comprehension.
--write effectively.
--utilize previously learned language skills.
--employ knowledge of basic concepts of energy from previous science courses.

INTRODUCTORY CONTENT:

We have heard about the energy crisis and have placed about as much faith in it as we have in UFO's. The general public is simply not aware of the critical energy situation. There is a tendency to look at it from only one perspective - the high utility bills in relation to one's pocketbook. Unfortunately, true to our faith in the "good old American know know," we feel that this problem will be solved by our technology. We fail to realize that the United States is using much more than our share of the world's energy for our population or that our need for energy doubles every ten years. New sources of energy will be found, but there must be time for development. What do we do, then, until this technology is developed?

We must involve ourselves and learn all we can about the sources of energy, the present reserves, the present and future demands. Above all, we must instill in our young people an awareness of the problem and lead them to develop a sense of individual responsibility. A well informed citizenry is vital.

NOTE TO TEACHER:

Prior to the teaching of a unit on energy, the teacher should order as much information concerning the energy situation as possible. The school librarian should be alerted so that together they can have available a wealth of information. Be sure to include any local utilities, the state department of education, and the state energy department. Also be sure to include the local and state cooperative extension services. Once material is received, the teacher should become familiar with this material so that notes can be made to guide class discussions on energy. It is essential for the teacher to be energy wise. (Note: References are given at the end of this unit.)

INSTRUCTIONAL PLAN

DAY 1

"Energy Awareness: An Introduction to the Energy Situation"

Each student is given a cube of sugar which is to last him/her all week. The student may nibble on it during this class period each day. Stress the need to make it last.

Activity:

Scrambled Energy Terminology; Energy Password

Motivation:

Teacher reads list of scrambled words explaining that this is not some science fiction terminology but real words that should be useful to them.

Objective:

The student will be able to identify and define vocabulary words related to energy topic in a game situation.

Materials Needed:

Mimeographed sheet, pencils, chalkboard, dictionaries, composition books

Instruction to Student - Description of Activity:

1. Hand out sheets; each student has 10 minutes to unscramble.
2. At end of 10 minutes the teacher reads the answers, explaining that they make about as much sense to some people scrambled as they do unscrambled.
3. Discuss importance of energy terminology.
4. Divide class into two groups for Energy Password.
   a. Teacher gives a student from each group a word from the list.
   b. Student gives a one word clue to each person in his group until the word is guessed. A point is subtracted from the original 10 for each additional clue.
   c. When word is guessed both groups get their dictionaries. The first student from either group that stands up to indicate that he has found the word may claim the points

for his/her group. If the group who guessed the word from the clues also defines it first, the points are doubled.

d. When word has been defined orally, the student writes it on the board so that all students may copy it in their notebooks.

e. Game continues until a group reaches 50 points or class period ends.

5. Any words not defined in class should be defined as an outside activity.

ENERGY TERMINOLOGY TO UNSCRAMBLE (10 words)

1. isisrc
2. ranutal gas
3. ilo erduc
4. nergye
5. earclun eorwp
6. cletidoryhicrety
7. rasol nergye
8. nidw
9. laoc
10. leogamerth

ANSWERS (for definitions)

1. crisis
2. natural gas
3. crude oil (oil)
4. energy
5. nuclear power (nuclear)
6. hydroelectricity
7. solar energy (solar)
8. wind
9. coal
10. geothermal

DAYS 2 AND 3

Activity:

Energy Collages
Energy Believe It or Not

Motivation:

Show picture of an unusual form of energy or energy source, one with which the students may be unfamiliar.

Objective:

Through the use of magazines and resources in the school library, the student will be able to do research for interesting and unusual facts about energy so that he/she will understand more about the urgency of the energy situation.

Materials Needed:

Magazines, scissors, poster board, glue, various forms of energy information (pamphlets, books, etc...previously collected by teacher/librarian), library resources.

Instruction to Students - Description of Activity:

1. Energy collages

   a. Students are divided into 4 groups; each group has materials for assembling collages.

   b. Students will find as many pictures as possible concerning energy and make one collage per group. (These could be placed in library or cafeteria so that other students may see them.)

2. Energy Believe It or Nots

   a. Place following (or similar) facts on board before class period. Students may read them as they work on collages.

      -The roots of some trees have the power to split huge rocks.
      -A mole can tunnel 300 feet in one night.
      -One farm worker feeds himself and 59 other people in the U. S.
      -The U. S. uses approximately 30 percent of the world's energy supply for only 6 percent of the world's population.

b. The teacher explains that these are just a few of the interesting and unusual facts about energy. The student will go to the library to find many more using encyclopedias, Guiness Book of World Records and energy resource materials.

This next step will be done as outside activity once information is gathered. Booklets may be turned in for evaluation by teacher on Monday of the next week.

c. Have students make an Energy Believe It or Not booklet. It may be illustrated to make it more fun and interesting. (Information may be quite useful on energy conservation unit which should follow this one.)

3. This will not be completed in one class period so class will need to spend the third unit day in the library.

Evaluation:

This can be done by grading booklets. To account for varying artistic ability (if booklet was illustrated), the teacher should base the grade on variety, accuracy, and number of facts gathered. The teacher should inform students of the minimum number of facts necessary for a passing grade.

DAY 4

Activity:

Energy Survey.

Motivation:

"Have you ever read or heard a statistic giving the number of people for, against, or undecided about an issue or a person's effectiveness in office?" Where does this information come from?" (Response: Survey or poll) (It would be excellent to have some newspaper examples). "By means of a survey after a class discussion, we will see how you feel about energy."

Objective:

The student will identify his attitudes towards energy by completing a survey (given in this unit).

Materials:

Mimeographed handout, pencils.

Instructions to Student - Description of Activity:

1. The teacher will lead a class discussion of the energy situation based on facts gathered through previous research and teacher information. Students should be encouraged to volunteer as much information as possible.

2. Give survey sheets; allow approximately 5-7 minutes for completion.

3. Discuss as teacher charts responses on the chalkboard. This survey should be added to the student's notebook for evaluation purposes.

4. Students should be encouraged to take the survey out and poll their friends and parents. The results can be tabulated by the teacher in class.

ENERGY ATTITUDE SURVEY

1. Do you believe there is an energy shortage? ___yes ____no ____don't know

2. Do you believe you have been given a realistic picture of the energy situation facing the United States?
____yes ____no ____don't know

3. Do you believe most Americans are energy "wasters?"
____yes ____no ____don't krow

4. Do you believe most Americans are energy "conservers?"
____yes ____no ____don't know

5. Do you believe Americans are "spoiled," self-indulgent and reluctant to take responsibility for the future? ____yes ____no ____don't know

6. Do you believe it is the responsibility of every U.S. citizen to conserve energy voluntarily? ____yes ____no ____don't know

7. Do you believe Americans will conserve energy only when government controls are imposed? ____yes ____no ____don't know

8. Would you be willing to reduce your standard of living to conserve energy? ____yes ____no ____don't know

9. Do you believe you as an individual can make an impact on energy consumption? ____yes ____no ____don't know

10. Would you conserve energy to save money? ____yes ____no ____don't know

11. Do you think the money saved is worth the inconvenience of conserving energy? ____yes ____no ____don't know

12. Do you think the energy saved is worth the inconvenience of conserving energy? ____yes ____no ____don't know

13. Do you feel technology will "bail us out" of the energy shortage?
____yes ____no ____don't know

14. Do you feel you have any input or participation in the energy usage decisions made by your family? ____yes ____no ____don't know

15. Are you going to <u>do</u> something to save energy? ____yes ____no ____don't know

DAY 5

Activity:

Energy Conservation Exercise.

Motivation:

Teacher asks for sugar cubes and reviews results. Teacher makes conservation point.

Objective:

After discussion and exercise, the student will demonstrate his/her awareness of the importance of individual responsibility in energy conservation by writing a paragraph.

Materials Needed:

Mimeographed handouts.

Instruction to Student - Description of Activity:

1. Energy problem is reviewed and discussed.
2. Questions are raised concerning the energy problems and possible solutions.
3. The teacher guides the discussion to individual responses.
4. Pass out energy checklist.
5. Discuss answers.

Evaluation:

Teacher could ask for a paragraph in which the student tells what he learned or how attitude has changed.

Unit Evaluation:

1. Students should be given a quiz in which they define the words used in this unit. (See Activity in Day 1)
2. Several products have been developed by students individually and placed in their notebooks for evaluation. These products to be evaluated are:
   a. A list of Energy Believe It or Nots
   b. Energy Survey
   c. Paragraph

Below you will see a list of items and activities which require energy for their manufacture, use, and disposal. Number (rank) these items in order of importance and necessity to you. Mark your reponses in column A--number 1 being most important on down to number 20 for least important.

A	B	C
___ watching television	___	___
___ hot water for bathing	___	___
___ electric toothbrush	___	___
___ waffle iron	___	___
___ synthetic clothing	___	___
___ reading a book	___	___
___ eating a raw apple	___	___
___ TV dinners	___	___
___ car ride to the store	___	___
___ drive-in movie	___	___
___ making homemade ice cream	___	___
___ lipstick or cologne	___	___
___ aerosol deodorant	___	___
___ electric hairdryer	___	___
___ bike riding	___	___
___ a walk in the sun	___	___
___ candy	___	___
___ nighttime football games	___	___
___ hot lunches	___	___
___ school buses	___	___

Now that you have ranked these items according to their importance to you, go back and rank the ones you feel are most energy intensive in Column B (from "1 to 10"). Discuss your answers in class.

Now mark in Column C the items you could do without which would help you and our nation conserve energy. Discuss your answers in class.

Suggestions:

1. Develop an Energy Alternatives bulletin board for the school.

Available Resources - Free and Inexpensive Materials

Publications

A Teacher's Guide to Free and Inexpensive Materials on Energy
Available from
Mississippi Energy Extension Center
P. O. Box 5406
Mississippi State, MS 39762

America's Energy Dilemma: Facts Versus Fallacies
Independent Petroleum Association of America
1101 Sixteenth Street, N. W.
Washington, DC 20036

An Energy History of the United States, grades 8-9
National Science Teachers Association
1742 Connecticut Avenue, N. W.
Washington, DC 20009

Energy Activity Guide, 1975
National Recreation and Park Association
Park Project on Energy Interpretation
1601 N. Kent Street
Arlington, VA 22209

Energy Crisis: A Teacher's Resources Guide, 1975
New Jersey Department of Education
180 W. State Street
Trenton, NJ 08680

Energy, The Enduring Crisis, 1974
Teacher Units
"The Energy Problems"
"Energy Alternatives"
"Conservation"
Committee for Environmental Information
483 N. Skinner Boulevard
St. Louis, MO 63130

Our Energy Problems and Solutions
Kitty Borah
Special Services Representative
Shell Oil Company
P. O. Box 2463
Houston, TX 77001

The Energy Challenge, grades 5-8
The Energy Challenge
Box 14306
Dayton, OH 45414

Information:

Consumer Information Services
Sears, Roebuck & Co.
D/703
Sears Tower
Chicago, IL 60684

Energy Information Center
505 King Avenue
Columbus, OH 43201

Tennessee Valley Authority
Power Market Division
325 Pioneer Building
Chattanooga, TN 37402

United States Department of Energy
Office of Public Affairs
Washington, DC 20585

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